

# **K–3 Module**

## **Unit 4 Proper Disposal of Waste**

### **Lesson 1**

### **Litter on the School Grounds**

### **Lesson 2**

### **Litter, Wildlife, and Decomposition**

### **Lesson 3**

### **Litter Relay**

### **Lesson 4**

### **Packaging Can Become Litter**

### **Lesson 5**

### **Antilitter Promotional Campaign**

*The lessons in this unit seem to have high levels of student involvement, which are very motivating. Each lesson can be tied into students' personal experiences.*

— Anne Harris, second-grade teacher, Jefferson Elementary School, Cloverdale Unified School District

*The kids really enjoyed it—our school is kept very clean so we went to the park next to our school to pick up litter. There wasn't very much to be had, so we concluded the people in our neighborhood cared about our park and recycled.*

— Lynda Mooney, first-grade teacher, Las Palmas Elementary School, National School District

*I feel that this unit is very well written. The activities are very meaningful to students.*

— Terese Nelson, third-grade teacher, Cobb Mountain Elementary School, Middletown Unified School District

## K-3 MODULE

# Unit 4: Proper Disposal of Waste Overview

### UNIT 4'S CONCEPT

We can make choices to reduce litter and reuse or recycle litter.

The five lessons in this unit are:

#### LESSON 1: LITTER ON THE SCHOOL GROUNDS

**Lesson's concept:** Litter is packaging, paper, and other materials that have been disposed of improperly.

In Lesson 1 students will:

- Sing a song about litter.
- Go on a litter walk to see whether they can find litter on the school grounds (or in a nearby area).
- Pick up litter (or conduct a visual survey) around the school grounds (or in a nearby area) and tally the number of pieces of litter by categories.
- Classify litter into items that can be reused, those that can be recycled, and those that should be placed in a trash can.
- Identify the areas which have the most amount of litter and which type of litter was most common.
- Listen to the reading of *The Wartville Wizard* by Don Madden.
- Offer some solutions to the litter problem.
- Make litter bags for cars.

#### LESSON 2: LITTER, WILDLIFE, AND DECOMPOSITION

**Lesson's concepts:**

- Litter can be dangerous to wildlife.
- Some litter decomposes rapidly, while other litter can take hundreds and even thousands of years to break down.

In Lesson 2 students will:

- Observe how a plastic bag can create problems for wildlife.
- Use a toy animal to show how wildlife can

get injured by litter.

- Guess how long it might take for specific litter to decompose or break down; then Conduct an experiment to determine the decomposition rates of different types of litter.
- Compare the students' guesses and observations concerning the time it takes for various objects to decompose or break down to those made by scientists.
- Write a story about litter and wildlife.

#### LESSON 3: LITTER RELAY

**Lesson's concepts:**

- Litter can be sorted and some of it can be recycled.
- We can make choices to reduce litter and to reuse or recycle the litter we collect. This conserves natural resources.

In Lesson 3 students will:

- Listen to and/or read *The Great Trash Bash* by Loreen Leedy.
- Work in teams as they participate in a relay race to classify litter into categories of litter that can be reused, recycled, or sent to a landfill.

#### LESSON 4: PACKAGING CAN BECOME LITTER

**Lesson's concepts:**

- Most litter is material used in packaging.
- People can choose to reduce the amount of packaging they buy and use.

In Lesson 4 students will:

- Discuss the purpose of packaging.
- Compare the amount of packaging used for different cookies.
- Identify the waste created by packaging.
- Determine that some packaging is easier to recycle than others.

- Reduce the amount of disposable packaging used in preparing lunches.

## LESSON 5: ANTILITTER PROMOTIONAL CAMPAIGN

**Lesson's concept:** Education and publicity can help discourage people from littering.

In Lesson 5 students will:

- Promote an antilitter campaign at their school by selecting one of the following activities:
  - Design posters to place around the school to encourage others and to remind themselves not to litter.
  - Make signs for highly littered areas on the school grounds (or other areas).
  - Make a display to show how to package a zero-waste lunch.
  - Write an antilitter jingle based on a well-known song.
- Survey the school grounds (or other areas) to determine whether their antilitter campaign is working.
- Read or listen to *Where Is the Treasure?* by Kelli C. Foster and Gina Clegg Erickson.

### Required Books to Implement Unit 4

- **For Lesson 1:**  
Madden, Don. *The Wartville Wizard*. New York: Simon and Schuster, 1986.
- **For Lesson 3:**  
Leedy, Loreen. *The Great Trash Bash*. New York: Holiday House, 1991.
- **For Lesson 5:**  
Foster, Kelli C., and Gina Clegg Erickson. *Where Is the Treasure?* Illustrated by Kerri Gifford. Get Ready . . . Get Set . . . Read! series. Hauppauge, N.Y.: Barron's Educational Series, Inc., 1995.

## PROJECTS

Projects provide hands-on experiences for students. Some lessons in Unit 4 are project-based and encourage students to apply what they have learned in the classroom. Some project-based lessons are service-learning oriented in which students participate in improving the environment in their school and community.

The following describe seven projects and examples of schools that have accomplished projects that address this unit on the proper disposal of waste. Teachers are encouraged to select one of these projects with their students or to have their students develop one of their own. If students implement an applicable project, they and their teachers are encouraged to send a description of the project to the California Integrated Waste Management Board's Office of Integrated Education, MS-14A, P.O. Box 4025, Sacramento, CA 95812-4025.

- **Project 1:** Students participate in statewide cleanup events, such as the Coastal Cleanup Day. For information on the Coastal Cleanup Day, contact the California Coastal Commission at 1-800-COAST-4U.
- **Project 2:** The class collects plastic six-pack holders and staples them together to make trellises. The trellises could be used in the garden or sold with seeds to parents or community members. (Lesson 2)
- **Project 3:** Students organize the sale of reusable lunch bags or boxes. They can have adults help them sew cloth lunch bags. (Lesson 4)
- **Project 4:** Students design and post "no littering" signs. (Lesson 5)

### *Mattie Washburn Elementary School, Windsor Unified School District<sup>1</sup>*

*Students at Kathy Angell's first-grade class regularly pick up litter in the Skyler Turney Nature Area, which is adjacent to their school. They identify which litter can be recycled and place the recyclable items in a recycling bin at school. They plan to make some signs to ask people using the nature area not to litter.*

### *Sunset School of the Arts, Livermore, Livermore Valley Joint Unified School District<sup>2</sup>*

*Thirty students at Sunset School of the Arts reached over 450 fellow students and countless community members with their commendable waste reduction efforts! Sunset students began by going on morning laps around the playground and picking up trash on the way. They*

<sup>1</sup>Submitted by Kathy Angell, first-grade teacher, Mattie Washburn Elementary School, Windsor Unified School District.

<sup>2</sup>"Jiminy Cricket's Environmentality Heroes." The Walt Disney Company, Inc., and the State of California's Environmental Education Interagency Network.

posted “NO LITTERING” signs at school and expanded their litter walks to include various areas of the local community. They separated and recycled the trash that they collected. Ultimately, they designed and orchestrated an entire museum on trash involving research, action, and education of the students, their families, their school, and their community

- **Project 5:** Students develop a presentation to teach other classes why it is important not to litter. Each group could choose a particular area to emphasize (e.g., packaging, litter and wildlife, litter on the school ground). In their presentations they could encourage other students to join their campaign and share ideas to decrease litter. (Lesson 5)
- **Project 6:** Students collaborate with local businesses to do a community project by drawing “reminder” signs on poster paper or on reused grocery bags to encourage people not to litter. (Lesson 5)
- **Project 7:** Students promote a litter-free campus through bookmark and T-shirt design contests.<sup>3</sup> (Lesson 5)
- **Other Projects**

*John B. Reibli Elementary School, Mark West Union School District<sup>4</sup>*

<sup>3</sup>*Taking Action: An Educator’s Guide to Involving Students In Environmental Action Projects.* Bethesda, Md.: Western Regional Environmental Education Council, 1995, p. 55.

Every Friday, students from Mark Angell’s first-grade class at John B. Reibli Elementary School pick up litter on their campus. They estimate the amount of litter collected and chart this amount on a graph. They found out that most of the litter is generated during after-school events. They are in the process of developing a plan to get additional garbage cans for special events. They also plan to ask students and adults using the campus for after-school activities to stop littering and to use the garbage cans.

*Tyrrell Elementary School, Hayward Unified School District<sup>5</sup>*

Ms. Essence Phillips’s class at Tyrrell Elementary School looked around the school and noticed that the school garden was run-down and the campus was strewn with litter. The students conducted research at the Museum of Environmental Science and at local libraries. During their studies the class learned about composting and developed a worm compost location to recycle the debris from their garden. Local nurseries donated trees and seeds. The students, along with their parents, came in on weekends to clean the campus and prepare the garden area for planting. Ms. Phillips’s class members shared their knowledge and project activities with their schoolmates during a school assembly. The revived garden provides the entire school with a place of natural beauty to enjoy as well as an outdoor laboratory to explore.

<sup>4</sup>Submitted by Mark Angell, first-grade teacher, John B. Reibli Elementary School, Mark West Union School District.

<sup>5</sup>“Jiminy Cricket’s 1997-98 Environmentality Winners.” The Walt Disney Company, Inc., and the State of California’s Environmental Education Interagency Network.

## NOTES

# LESSON 1: Litter on the School Grounds

## LESSON'S CONCEPT

Litter is packaging, paper, and other materials that have been disposed of improperly.

### PURPOSE

Students explore the question: "What is litter?" They identify areas on the school grounds or nearby areas where litter is a problem and offer ways to solve the problem.

### OVERVIEW

In this lesson students will:

- Sing a song about litter.
- Go on a litter walk to see whether they can find litter on the school grounds (or in a nearby area).
- Pick up litter (or conduct a visual survey) around the school grounds (or in a nearby area) and tally the number of pieces of litter by categories.
- Classify litter into items that can be reused, those that can be recycled, and those that should be placed in a trash can.
- Identify the areas which have the most amount of litter and which type of litter was most common.
- Listen to the reading of *The Wartville Wizard* by Don Madden.
- Offer some solutions to the litter problem.
- Make litter bags for cars.

### CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS

- Students compare the types of litter that they have found and categorize it according to materials that can be reused, recycled, or placed in a landfill.
  - "Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept, students know objects can be described in terms of the materials they are made of and their physical properties." (*Science Content Standards, Grades K–12; Kindergarten; Physical Sciences, Standard 1a*)
  - "All matter has properties that can be ob-

served, defined, and recorded. Matter occupies space, it has substance, and we can measure its weight." (*Science Framework, page 41*)

- "Students collect information about objects and events in their environment." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 3*)
- In groups, students tally the number of pieces of litter by specific categories; then they compile the data from all groups.
  - "Students sort and classify objects." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 2*)
  - "Students organize, represent, and compare data by category on simple graphs and charts." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 6*)
- Listen to the reading of *The Wartville Wizard* by Don Madden.
  - Students "identify characters, setting, and important events." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 2*)
- Students make car litter bags.
  - "Students create original artworks based on personal experiences or responses." (*Visual and Performing Arts Framework; Visual Art: Creative Expression Component, Goal 4, page 101*)

### SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, classifying, relating

## TIME

30–60 minutes to prepare for the lesson; 60 minutes per day for two days to implement the lesson

## VOCABULARY

litter

## PREPARATION

- 1. Read the “Background Information for the Teacher” at the end of this lesson.
- 2. Select an area on the school grounds where students can collect (or observe) litter. If your school grounds are litter free, look for littered areas close to the school where students can collect litter safely.

**Note:** If you prefer not to have your students collect litter, students can observe the litter on a walk around the school grounds, but you will need to collect a pile of litter from the school grounds (or other area) for students to analyze.

- 3. Make copies of the tally sheets (pages 168–172) to provide one for each group of students. Each group should have one tally sheet (note that all tally sheets are different from each other). For younger students, use the tally sheets as a class and work in one large group.
- 4. Make a transparency of the “Class Summary of the Litter Collected” (page 173).

**Note:** You may have already done the following in a previous unit.

- 5. Find out which materials are recycled in your community. (Contact the city or county recycling coordinator or the local garbage/recycling company.) Ask whether you can be sent a class set of brochures indicating which materials are recycled in your community. Students can take these home to their families. Also ask for a directory of recyclers in the community. This allows families without curbside recycling programs to find drop-off centers for their recyclables. Note that the materials that are recycled may vary from community to community.
- 6. Some communities organize “antilitter” campaigns and may have educational materials (e.g., booklets, videos). If so, ask for copies for your students and use these in Lesson 5.

## MATERIALS

**Note:** Encourage students to be conservative

when using materials in the classroom. The object is to create less waste.

Examples from the following (see the tally sheets at the end of this lesson):

- Beverage containers (aluminum soda cans, plastic soda bottles, juice or milk cartons, paper or foam cups)
- Paper (office white and colored copy paper, newspapers, magazines, cardboard)
- Packaging (plastic sandwich bags; candy, cookie, and gum wrappers; wrappers from fast food restaurants; brown paper bags; cans; potato or corn chip bags; other wrappers for nonfood items)
- Plastic (toys, eating utensils)
- Other litter (food, clothing)
- Chart paper or a blank transparency
- One or two pairs of plastic gloves (or clean, reused plastic produce bags to use as gloves) for each group of students
- Plastic or cloth sheet that can be washed and reused, or newspaper that could be recycled afterwards, on which to dump the litter for analysis
- Collection bags (e.g., used grocery bags) for each team of two to three students for litter collection on the litter walk
- One to four adults (classroom aide, parent, or other responsible adult) to help monitor the students and what they are picking up on the school grounds or other area
- The book, *The Wartville Wizard* by Don Mad-den
- Lunch-sized paper bags to make a car litter bag, one for each student
- Art supplies to decorate the bag
- Yarn or pipe cleaners to make a handle for the car litter bag

## PRE-ACTIVITY QUESTIONS

- A. Select two students; one to be a “litterbug” and one to be a “neaterbug.” Provide several typical pieces of litter (e.g., a can, a piece of paper, and several packaging materials, such as a potato chip bag and candy wrappers). Give these to the litterbug. Provide an empty bag to the neaterbug.

- B. Teach to students the song, “Here Comes a Litterbug” (page 167), which is sung to the tune of “Have You Ever Seen a Lassie?” and have them sing the song as the litterbug and neaterbug act out their roles in front of the class.
- C. Ask students: What is a *litterbug*? *Someone who litters.*
- D. Write the word *litter* on the board.
- E. Ask: What is litter? *Trash that is dropped on the ground. Trash scattered on the ground. Trash that is not in its proper place. Litter is cans, paper, plastic bags, and other garbage that is thrown on the ground at school, in the cities, in parks, into rivers, on beaches, and all other places.*
- Where have you seen litter? *On the school grounds, in the park, on our street, in a shopping center.*
  - Who or what creates litter? *People who drop the trash on the ground; wind that spreads trash from an open garbage can; domestic animals, like cats and dogs, and wildlife, like raccoons and bears, that get into garbage cans and bins and spread trash while looking for food.*
  - Who made the materials that make up litter? *People.*

**Note:** When scientists refer to forest *litter*, they mean the leaves, branches, and other plant parts that have fallen on the forest floor. In this lesson *litter* refers to human-made objects which are disposed of improperly on the ground.

- Why do you think people litter? *Some people don't want to make the effort to take their trash to the garbage can; they don't care; they don't think that littering creates any problems; they figure that someone else will clean it up.*
- What do you think when you see trash in the street, or on the school grounds, or when you see someone throwing trash on the ground, out a car window, or even trash blowing out the back of a pickup truck? *It doesn't matter; I don't like it because it looks dirty; it makes the area look messy; it makes me mad; I don't care; I don't like it, but I can't do anything about it.*
- Have any of you ever picked up someone else's litter on the street and thrown it away in a trash can?

- If so, why did you do it?
- What did you think about picking up someone else's trash?

## PROCEDURE

- A. Tell students that they will be going on the school grounds to collect (or observe) some litter. They will analyze and record what they find.

**Note:** If you prefer not to have students pick up litter, take students on a walk on the school grounds (or other selected area) and have them record on their tally sheets what they see. Back in the classroom complete the transparency, “Class Summary of the Litter Collected.” Then do section “F.” Show the students the pile of litter you personally collected and complete section “G.”

- B. Ask students:
- How much litter do you think we will find on the school grounds (or other selected area)? Students can estimate the number of plastic or paper bags that the whole class might fill full of litter. Record their estimates on a piece of butcher paper or a transparency, which will allow the class to keep an ongoing record.
  - What types of litter do you think we will find? List students' responses on the butcher paper or transparency.
  - What type of litter do you think you will find the most of? Circle that item on the list.
- C. Display the different types of litter (e.g., beverage containers, paper, packaging, plastic) listed in the “Materials” section.
- Show the transparency, “Class Summary of the Litter Collected.”
  - Have students select from your pile of litter the various types of litter indicated on the transparency.
- D. Discuss with students the rules for the litter walk. If students will be collecting litter, they should follow these safety rules:
- Wear plastic gloves (or cover hands with plastic sandwich bags) when handling the litter.
  - If you are not sure what something is, ask your teacher or another adult who is with your class before touching it.

- Work together, stay with your class, and take turns with your partner or group.

**Note:** Consider making a list of things you do not want the students to pick up; e.g., cigarette butts, broken glass, food, pins, needles, and syringes. You might tell them that if they find items on this list, they should ask you or another adult to dispose of them properly.

**SAFETY NOTE:** Syringes are extremely dangerous and can be the source of a deadly disease. Adults should not touch them directly; use tongs or forceps to pick them up to avoid any contact with the skin. Place the item in a hard, covered container. Call the health department to determine a safe disposal site.

- E. Divide the class into five groups. For younger students you might want to do this as a class activity. Do “Option #1” or “Option #2” of the following:

#### Option #1

Students will complete a tally sheet as they collect or observe the litter.

- Provide a different tally sheet for each group. (Note that there is a “Tally for Beverage Containers Litter,” a “Tally for Paper Litter,” a “Tally for Packaging Litter,” a “Tally for Plastic Litter,” and a “Tally for Other Litter.”)
- Go over with students from each group what they are supposed to collect.
- Provide a plastic grocery sack and one or two pairs of gloves (or plastic bags to use as gloves) for each group.
- Lead students to the designated area (selected in “Preparation” step “1”) for picking up the litter.
- Ask them to stay in their groups as they use gloves to collect the types of litter indicated on their tally sheets. (One student can hold the bag, another student can place a tally mark next to the type of item collected, and the other students in the group can pick up litter, identifying each item collected and placing it in the bag.)
- If available, assign an adult to supervise each group. Otherwise, you will need to make sure that each group is picking up what it was assigned to pick up.
- After litter has been picked up, return to the classroom.

- Determine the amount of litter collected, by volume, and the number of equal-sized bags that hold the litter. Third-grade students could weigh the litter and record the weight on a chart.
- Project the transparency of the chart, “Class Summary of the Litter Collected.” Have students share their tally sheets as you record the numbers on the chart.

#### Option #2

Students collect the litter first. Back in the classroom, students separate all the litter collected according to categories listed on the tally sheets. Then each group completes its own tally sheet.

- Lead students to the designated area (selected in “Preparation” step “1”) for picking up the litter.
  - Provide a plastic grocery sack and one or two pairs of gloves (or plastic bags to use as gloves) for each group.
  - Encourage all groups to collect as much litter as possible.
  - Have groups bring the litter to the classroom.
  - Determine the amount of litter collected, by volume, and the number of equal-sized bags that hold the litter. Third-grade students could weigh the litter and record the weight on a chart.
  - Dump the litter on a plastic or cloth sheet.
  - Provide tally sheets (and additional plastic gloves if needed) to groups. Option: Have students brainstorm categories and create their own charts.
  - Ask students to separate the litter according to their tally sheets and place the litter in piles by categories.
  - Have groups count the number of specific pieces of litter listed on their tally sheets and record the information on their tally sheets. Make sure that items of litter are not counted twice.
  - Project the transparency of the chart, “Class Summary of the Litter Collected.” Have students share their tally sheets as you record the numbers in the chart.
- F. While projecting the completed transparency of the “Class Summary of the Litter Collected,” ask students the following:
- What kinds of litter did you find?

- What did you find most often? Paper? Cans? Glass? Plastic bags? Newspapers? Why do these things end up as litter instead of other things?
  - What did you find the least of?
  - What items seem to become litter because of their design or use (e.g., six-pack rings, bottle caps, scrap paper, plastic lunch bags, fast food drink lids, and straws)?
  - What areas contained the most litter? Why? What types of litter were most common in this area?
  - How did the school grounds (or other selected area) look after you finished?
  - What do you think about the work you did?
- G.** Read to students *The Wartville Wizard* by Don Madden and show the illustrations. Ask students:
- What did the wizard see when he went outside? *He saw that it was not a perfect place. He saw trash (litter).*
  - How did the trash (litter) get there? *People threw it on the ground.*
  - What did the wizard do first about the litter problem? *He picked it up.*
  - What did the wizard do next about the litter problem? *He made the litter stick to the person who threw it on the ground.*
  - What did the people do when the litter stuck to them? *They got angry and had the sheriff visit the wizard to arrest him.*
  - What made the people stop littering? *The wizard explained to them that he had been picking up their trash, and he finally made their own trash stick to them so they would realize what they were doing. The people became embarrassed and promised not to litter any more.*
- H.** Ask students what they could do with the litter they collected on the school grounds (or other selected area). Can it be reused? Could it be recycled?
- If students do not already know, describe to them those items that can be recycled in their community. Show examples, using items from the litter pile.
  - Ask students what happens to things that are recycled. *They are made into new*

items.

**Note:** Additional information and lessons on recycling are included in the K-3 Module, Unit 2, and the 4-6 Module, Unit 2.

- Have students classify litter into (a) litter that can be reused; (b) litter that can be recycled; and (c) litter that cannot be reused or recycled and should therefore be placed in a trash can.

**Note:** Some things might be recyclable only if they are not too soiled or dirty. For example, if newspaper is muddy, it should be put in a waste container; some soiled things, such as cans, could be rinsed off.

**Homework Assignment:** Have students keep a tally sheet of, or record in their journals, the amounts and types of litter they see as they go to and from school.

- I.** Discuss the homework assignment concerning students' observations of litter. Have students tally the types of litter they saw. How much of the litter do they think was thrown out of a car? (In "Application" students will make car litter bags.)

Picture intentionally deleted.

Students in Gayle MacDonald-Gura's, third-grade class at Lower Lake Elementary School tally the types of litter they saw to and from school.

## DISCUSSION/QUESTIONS

Discuss with students the following:

- What is the problem with litter? *It is ugly, unhealthy, unsafe for people and wildlife.* (The topic of litter's effects on wildlife will be addressed further in Lesson 2.)
- Whose problem is "litter"? *Other people, ours.*

- What do you think about having litter on the school grounds (or other areas)? *We don't like it.*
- What can we do to reduce the litter on campus (or other selected area)? *Clean it up; don't litter; teach others not to litter.*
- Who can help? *Our friends, teachers, parents, custodians.*
- What can we do to keep ourselves from littering? *Just don't do it; wear clothes with pockets and put wrappers in pockets.*

**Note:** Keep several bags of litter to use in Lesson 3 and Lesson 4. You will need to select clean pieces of litter to use in Lesson 3.

## APPLICATION

### A. Ask students:

- In the past, when you saw an empty soda can on the school grounds, what did you usually do? *Kick it; play catch with it; leave it; pick it up and throw it in the trash; put in a recycling container.* If students said they used to leave the can on the ground, ask them why they did so. *It's dirty; I didn't throw it on the ground, someone else did; they pay other people to clean up trash; it could be dangerous.*
- Now if you see an empty soda can on the school grounds, what would you do? What could you do?

### B. Repeat the litter pickup over several days to discover what types of materials are being discarded regularly. Have students organize, represent, and compare the litter data by making a simple graph or chart.

- Ask students where the litter comes from, who puts it there, and what can be done to discourage littering.
- Consider experimenting with the placement of waste containers (discuss this with the school custodian). Provide a waste container in the most littered areas, add more containers in certain areas, or create containers that are more attention-getting (e.g., students could paint them).

### C. Have students record in their journals how they would solve the litter problem on their school grounds or other areas that they studied.

**Note:** For younger students, have them discuss as a class how they would solve the campus litter

problem. Then ask them to draw a picture in their journals of one thing that they can do.



Submitted by Lynda Mooney, first-grade teacher, Las Palmas Elementary School, National School District.

**Note:** In Lesson 5 students will be making posters to discourage littering on school grounds.

- ### D. Have each student make a litter bag for his or her family's car. This can be made from a lunch-sized brown paper bag. Provide art materials for students to decorate the bags. Handles can be made from yarn or pipe cleaners. Older students could sew litter bags from cloth and line the cloth bags with plastic bags.

**Project Idea:** Encourage students to participate in statewide cleanup events, such as the Coastal Cleanup Day. For information on the Coastal Cleanup Day, contact the California Coastal Commission at 1-800-COAST-4U or visit its Web site at [www.ceres.ca.gov/coastalcomm/](http://www.ceres.ca.gov/coastalcomm/).

## EXTENSIONS

- Assign students to groups of four or five and have them create a collage with clean litter they collected. Ask students whether rearranging the litter (by making a collage) makes it more appealing.
- Have students graph the litter by taping the litter to butcher paper. Have students repeat their litter walk, record their results, and create a new graph to show whether there has been any change.
- Have students create a bulletin board of pictures of litter free and beautiful areas. These could be placed in the school's office, teachers' lounge, or cafeteria.
- Have students count the number of outdoor trash cans on the school grounds. Do they keep all the trash contained? Are additional cans needed to eliminate littering?

- E. Ask your students to think about this idea: Does the kind of litter that is found tell them something about the neighborhood? How could that be so? Show students several pieces of litter you have chosen in advance: a few school papers from a student's notebook; packages from a fast-food store, e.g., wrappers, cups, bags; some movie ticket stubs and a page from the newspaper's movie section with some names of movies circled. After students have examined the evidence, ask them:
- What does this litter tell you about the neighborhood? *There's a school, fast-food restaurant, and movie theater nearby; some students attending the school go to the fast-food restaurant and then to a movie theater.*
  - Which of the materials can be reused or recycled, and which should be put in a trash can? (This depends on what you have chosen: pages from a school notebook might go in mixed office paper; some fast-food restaurants' cardboard boxes are plastic-coated and, therefore, cannot be recycled, but their bags can be recycled with paperboard and cardboard; card stock movie ticket stubs can be recycled with cardboard; the newspaper can be recycled.)
  - What can we do to encourage people in this neighborhood not to litter?

## RESOURCES

### Video

*Reduce.* Protecting Our Environment series. Pied Piper, 1992 (14 minutes).

Provides information on how to reduce the amount of trash that is thrown away. Explains how overpackaged and disposable items create excess trash and waste natural resources.

### Books

Brown, Laurie Krasny, and Marc Brown. *Dinosaurs to the Rescue! A Guide to Protecting Our Planet.* New York: Little, Brown, and Company, 1992.

Illustrated with colored cartoons and has dinosaurs encouraging readers to use less, use again, and participate in projects that enhance the environment.

Foster, Kelli C., and Gina Clegg Erickson. *Where Is the Treasure? Get Ready . . . Get Set . . . Read!*

series. Hauppauge, N.Y.: Barron's Educational Series, Inc., 1995.

Simple-to-read text and colored illustrations describe how a group of animals cleaned up their environment. (This book is featured in Lesson 5.)

Leedy, Loreen. *The Great Trash Bash.* New York: Holiday House, 1991.

A story about how the inhabitants in Beaston solved their trash problem by deciding to make less trash, to fix things, to clean up litter, and to build a recycling center. (This book is featured in Lesson 3.)

Madden, Don. *The Wartville Wizard.* New York: Simon and Schuster, 1986.

Tired of cleaning up other people's trash, the Wartville Wizard makes litter stick to the person who threw it away.

## HERE COMES A LITTERBUG

(Sung to the tune of "Have You Ever Seen a Lassie?")

Oh, here comes a litterbug, a litterbug,  
a litterbug,

Here comes a litterbug, see what it'll  
do.

I can choose not to be a litterbug, a litterbug,  
a litterbug,

I can choose not to be a litterbug, and  
so can you.

Oh, here comes a neaterbug, a neaterbug,  
a neaterbug,

Here comes a neaterbug, see what it'll  
do.





I can choose to be a neaterbug, a neaterbug,  
a neaterbug,

I can choose to be a neaterbug, and so can  
you.

Litter is garbage out of place—improperly disposed packaging, paper, and other materials. Most litter is not only visually unpleasant but also dangerous to people and other living things (this topic is addressed in Lesson 2). In addition, litter is a waste of resources, which could be reused or recycled.

# TALLY FOR BEVERAGE CONTAINERS LITTER

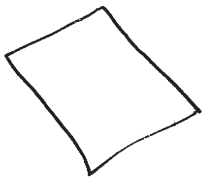
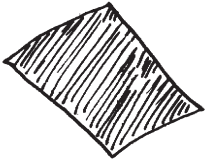
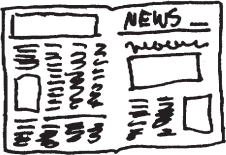

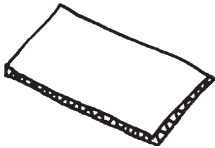
## Group Sheet

Picture of beverage container litter	Type of beverage container litter	Tally
	Aluminum soda cans	
	Plastic soda or water bottles	
	Juice or milk cartons	
	Paper or foam cups	
	Other	

# TALLY FOR PAPER LITTER

(Not beverage containers and not packaging)








## Group Sheet

Picture of paper litter	Type of paper litter	Tally
	White office copy paper	
	Colored office copy paper	
	Newspaper	
	Magazine	
	Cardboard	
	Other	

# TALLY FOR PACKAGING LITTER

(Not beverage containers)



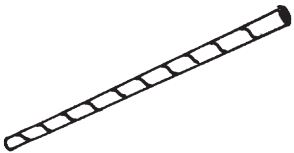


## Group Sheet

Picture of packaging litter	Type of packaging litter	Tally
	Plastic sandwich and grocery bags	
	Candy, cookie, and gum wrappers	
	Potato chip or corn chip bags	
	Wrappers from fast-food restaurants	
	Brown paper bags	
	Metal cans (not for beverages)	
	Other wrappers for nonfood items	
	Other	

# TALLY FOR PLASTIC LITTER

(Not packaging)


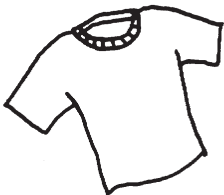


## Group Sheet

Picture of plastic litter	Type of plastic litter	Tally
	Toys	
	Eating utensils (forks, spoons)	
	Straws	
	Cups	
	Six-pack holders	
	Other	

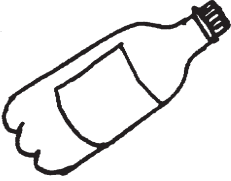

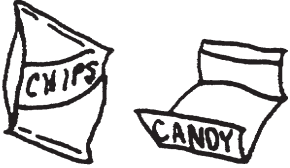
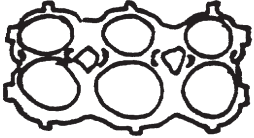

## TALLY FOR OTHER LITTER

(Not packaging, not beverage containers, not plastic, not paper)

### Group Sheet

Picture of other types of litter	Other types of litter	Tally
	Food	
	Clothing	
	Polystyrene (Styrofoam)	
	Wooden objects	
	Other	

# CLASS SUMMARY OF THE LITTER COLLECTED

Picture of type of litter	Type of litter	Class tally (number of pieces)
	Beverage containers	
	Paper	
	Packaging	
	Plastics	
	Other litter	
<b>Total pieces of litter</b>		

## BACKGROUND INFORMATION FOR THE TEACHER

Litter is usually dropped by people, who often litter an area when they feel no ownership for the property. Some people assume that someone else will clean up after them. Still others find it inconvenient to carry their trash to the nearest garbage can.

Litter can also be spread by wind (from open garbage containers) or by domestic pets or wildlife that get into garbage cans. In communities that use storm drains and flood channels to carry rainwater away, litter can be washed into them and pollute waterways. Debris in creeks and marine habitats can be harmful to wildlife.

Beauty, safety, and community pride are values that support a litter-free environment. When litter is picked up and put where it belongs with recyclables or in the trash can, there are many benefits. A litter-free environment poses less potential harm to humans and wildlife (e.g., children cutting themselves on broken glass, birds and other animals becoming entangled in plastic bags and beverage can yokes). In addition, a litter-free environment yields neat-looking yards, neighborhoods, streets, and school grounds. Also, parks and other natural areas can be enjoyed more for their beauty when litter is not present.

One child picking up a potato chip bag and putting it in the trash can, or picking up an aluminum can and putting it in a bin for recycling, can be a powerful agent of change for others (e.g.,

peers, older children, and adults) who observe the action. Children who feel strongly about having orderly surroundings can assert some control over their environment by picking up litter when they see it. The result is an assertion of individual power in having their space cleaner. Some children may respond positively to their experience in keeping their school environment clean, because the action provided them with a sense of pride and accomplishment. Students may recognize an individual's personal responsibility for properly managing the resources he or she uses.

Finally, not all children will share the values of order and neatness. By emphasizing the importance of putting litter in its proper place and including the recycling bin where items can be made into new material, you can appeal to a different value besides neatness: that of helping to use materials over and over to conserve natural resources. It is hoped that students involved in cleaning up litter at school will more likely grow into adolescents and adults who will also ensure that litter is managed in their homes and neighborhoods.

# LESSON 2: Litter, Wildlife, and Decomposition

## LESSON'S CONCEPTS

- Litter can be dangerous to wildlife.
- Some litter decomposes rapidly, while other litter can take hundreds and even thousands of years to break down.

### PURPOSE

Students learn how wildlife can be injured by litter. They also find out how long it takes for certain types of litter to decompose or break down.

### OVERVIEW

In this lesson students will:

- Observe how a plastic bag can create problems for wildlife.
- Use a toy animal to show how wildlife can get injured by litter.
- Guess how long it might take for specific litter to decompose or break down; then conduct an experiment to determine the decomposition rates of different types of litter.
- Compare the students' guesses and observations concerning the time it takes for various objects to decompose or break down to those made by scientists.
- Write a story about litter and wildlife.

### CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS

- Students compare the decomposition rates of various litter.
  - "Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept . . . students will . . . follow verbal instructions for a scientific investigation." (*Science Content Standards, Grades K–12; Grade 2; Investigation and Experimentation, Standard 4g*)
  - "Change is affected by surroundings."

(*Science Framework, page 52*)

- Students describe how litter can injure wildlife.
  - "Different types of plants and animals inhabit the Earth." (*Science Content Standards, Grades K–12; Kindergarten; Life Sciences, Standard 2*)
  - "Human practices can often affect the well-being of other species in the environment. Humans should respect living things and foster their survival." (*Science Framework, page 141*)
  - "To develop geographic literacy, students must understand human and environmental interaction." (*History–Social Science Framework, pages 15 and 16*)
- Students write a story about litter and wildlife.
  - Students "select a focus when writing." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 8*)
  - Students "write narratives (that) (a) provide a context within which an incident occurs; (b) include well-chosen detail to develop the plot; (c) provide insight into why the selected incident is memorable." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 18*)

### SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, relating

## TIME

30 minutes to prepare for the lesson; 60 minutes for “Part I” and 60 minutes for “Part II” to implement the lesson; plus 15 minutes to

observe the experiment every two to four weeks for a period of three months

## VOCABULARY

decompose, biodegradable

## PREPARATION

- 1. Read the “Background Information for the Teacher” at the end of this lesson.
- 2. Ask students to bring stuffed animals or other toy animals to class; toy birds are especially needed.
- 3. Make a transparency of “Ways Litter Injures Wildlife” (page 180) and “Litter Over Time” (page 181).

## MATERIALS

### For “Pre-Activity Questions”

- The transparency, “Litter Over Time”

### For “Part I, Identifying Ways Litter Injures Wildlife”

- The transparency, “Ways Litter Injures Wildlife”
- Transparent plastic bag
- An aquarium or other transparent container of water
- Plastic six-pack holders, plastic bags, fishing line, cans, and other litter that can injure wildlife (Make sure that the litter is safe for students to handle.)
- A variety of stuffed or other toy animals brought in by students (Have some extras for those students who forget to bring a toy to class.)

### For “Part II, Determining How Long It Takes for Litter to Decompose”

- Eight containers (These can be 2-liter-size or gallon-size beverage containers or plastic half-gallon or gallon containers with lids [check your school’s cafeteria for large plastic jars with lids]. All six containers should be the same size.)
- Enough garden soil to fill four containers half full (Use garden soil not potting soil bought at garden stores because it is usually sterilized and therefore lacks microorganisms necessary for the decomposition of organic material.)

- Enough water to fill two containers half full of water (If possible, use water from a creek, pond, or lake, because it usually contains organisms that can eat or decompose items.)
- For each of four containers: piece of banana peel, leaf, potato peel, piece of bread
- For each of four containers: marble (glass); one ring from a plastic six-pack drink holder; and a 1- by 1-inch piece of: notebook paper, milk carton, plastic from a sandwich bag, wool material, leather, polystyrene, and aluminum foil

**Note:** Wool material and leather can be purchased in secondhand stores or at yard sales.

## PRE-ACTIVITY QUESTIONS

- A. Place a transparent plastic bag in an aquarium or other transparent container of water.
  - Ask students how this bag could create a problem for wildlife living in the water. *The bag could get wrapped around an animal or parts of an animal; some animals, such as turtles, might eat it.*
  - Explain that sea turtles can mistake plastic bags for one of their foods, which is jellyfish. Ask students what could happen if an animal eats plastic? *It could get sick or die.* Tell students that plastic is not digestible, and the bag can get caught in an animal’s stomach or intestines. The animal could die from starvation or illness.
- B. Ask students what might be some ways that wildlife can be injured by litter. List students’ ideas on the chalkboard or on a piece of butcher paper.
- C. Ask students whether litter ever “goes away” by itself. *Yes, some of it can become part of soil.* Can litter break down naturally or decompose? (You might need to discuss with students the definition of the word *decompose*. This topic is covered in the K–3 Module, Unit 3.) *Some litter can decompose.*

Is there any litter that can last a very long time in the environment? *Yes. Why? It doesn't break down very fast.* (Students will learn more about this in this lesson.)

- D. Cover the second column of the transparency, "Litter Over Time." Show the transparency and have students guess how long it might take for a specific litter item to decompose or break down. Record students' answers on the chart. Tell students that organic materials (those that came from living things; i.e., bodies of plants and animals) can be decomposed by decomposers.

## PROCEDURE

### Part I, Identifying Ways Litter Injures Wildlife

- A. Show the transparency, "Ways Litter Injures Wildlife." Have students describe other ways that wildlife can be injured by litter and add these to the list generated by the class in "Pre-Activity Questions." This list should be saved for later use in the "Discussion/Questions" section "A." Ask students to describe how animals they know might be injured by litter. *My dog might eat foil with food on it.*

**Note:** Students should be aware that domestic animals can also be injured by various types of litter.

- B. Have students share the toys that they brought to class.
- C. Provide litter items, such as plastic six-pack holders, plastic bags, fishing line, and cans. Have students use the litter and their stuffed animal to demonstrate to the class different ways that animals can

get hurt by using litter. For those students who did not bring a toy, ask them to draw or describe a situation where a bird or other wildlife might be injured by litter and to share these with the class.

- D. Discuss the ways students can keep animals from getting injured by litter. *Keep an area clean. Cut apart the plastic six-pack holders before placing them in a garbage can. Keep garbage cans covered.* Why should we care about wildlife getting injured? *I like animals and I don't want them to be hurt; animals are important because they are natural resources and other animals depend on them.* Encourage students to elaborate why they think animals are important.

### Part II, Determining How Long It Takes for Litter to Decompose

- A. Discuss with students:
- What do you think happens to litter on the ground? *It stays there for a long time; it may decompose* Does it ever become part of the soil? *Yes; maybe.*
  - What might determine whether an item breaks down (decomposes) or not? *What the item is made of.*
  - What effect might moisture have on the decomposition of items? *It might make some items decompose faster.*
  - What effect might sunlight have on the decomposition of items? *Sunlight might break down some items.*
  - How can we find out the answers to the questions we just discussed?
  - What type of experiment can we do to find out what types of litter decompose quickly? (One suggestion is described

(Use school's letterhead.)

Dear Parent or Guardian,

Please read the following information with your child:

Our class is studying litter. Tomorrow we will look at ways animals can get injured by litter. For example, plastic six-pack holders and fishing line can wrap around the neck, wings, or legs of a bird, causing the bird problems when it tries to walk, swim, or fly.

Please have your child bring a toy animal (ideally, a bird, but any animal will do) to class tomorrow, so that the ways litter can affect wildlife can be demonstrated.

Thank you,

below, but your students might come up with other ideas.)

**B.** Do the following as a class or in eight groups (if in groups, provide one container for each group).

1. Use eight containers. Fill four containers half full of garden soil. Fill two containers half full of water. Place the items listed below in the corresponding containers. Label the containers.
2. Ask students to predict how long they think these items will take to decompose.
  - **Containers 1 and 2**—soil, piece of banana peel, leaf, potato peel, piece of bread. Keep container 1 moist and container 2 dry. Lay the pieces on top of the ground to represent litter.
  - **Containers 3 and 4**—marble (glass); one ring from a plastic six-pack drink holder; and a one inch by one inch piece of: notebook paper, milk carton, plastic from a sandwich bag, wool material, leather, polystyrene, and aluminum foil. Keep container 3 moist and container 4 dry. Lay the pieces on top of the ground to represent litter.
  - **Container 5**—water, piece of banana peel, leaf, potato peel, piece of bread.
  - **Container 6**—water, marble (glass); one ring from a plastic six-pack drink holder; and a one inch by one inch piece of: notebook paper, milk carton, plastic from a sandwich bag, wool material, leather, polystyrene, and aluminum foil.
  - **Container 7**—piece of banana peel, leaf, potato peel, piece of bread. Wipe each piece with a paper towel to remove moisture.
  - **Container 8**—marble (glass); one ring from a plastic six-pack drink holder; and a one inch by one inch piece of: notebook paper, milk carton, plastic from a sandwich bag, wool material, leather, polystyrene, and aluminum foil. Wipe each object with a paper towel to remove any moisture.

**Note:** Containers 7 and 8 are the control of this experiment. These containers do not have soil or water.

**Note:** Students might want to bury litter, but you can remind them that litter is usually found on top of the soil or on top of or in the water. However, if students want to experiment to see which materials decompose faster in soil, they can bury them about three to five inches below the surface, in a planter box or large flower pot, or somewhere on the school grounds. After three months they can examine the litter. Note that in dry areas, the organic items may not decompose very rapidly.

**C.** Discuss with students the following questions about the objects that students buried in soil:

- What do you predict will happen to the banana peel, leaf, and other organic items?
- Which objects do you think will decompose first?
- Which objects will take the longest to decompose?
- Which objects that will decompose might enrich the soil?
- Do you think moisture will increase the decomposition of certain items?
- Which objects are breaking into little pieces but are not decomposing?
- Which objects might “never” decompose?

**D.** Discuss with students the following questions, which are about the objects in water:

- What happened to the water in which litter was placed?
- What happened to the litter in the water?
- How might this littered water affect the plants or animals that live in the water?
- What would you do if this water was your supply of drinking water?

**E.** Check the decomposition of each item of litter every four weeks. Encourage students to take notes and to illustrate how each item has changed (if at all). Conduct “Discussion/Questions,” section “C.”

## DISCUSSION/QUESTIONS

### A. Discuss with students:

- What are some reasons not to litter? *It is ugly; it could injure living things.*
- How does litter affect wildlife? *It can injure animals or make them sick.*
- Let's review your answers in the "Pre-Activity Questions" about ways litter injures wildlife. Do you think any of your original ideas need to be changed? If so, which ones and why?
- How long will litter stay in an area if it is not cleaned up by people? *Depends on what the litter is made of.*

### B. Project the transparency, "Litter Over Time." Compare students' responses to the decomposition or break-down time estimated by scientists. Keep a record of students' responses to review at the conclusion of the experiment.

### C. At the conclusions of their experiments, review with students the questions in "Part II," sections "C" and "D."

## APPLICATION

**Homework Assignment:** Have students take their toy animals and litter home to educate their families on the hazards of litter on wildlife.

- Have students report back on the results of their discussions with their families (homework assignment).
- Have students make a time line or bar graph of decomposition rates, based on their predictions. Then they can make a graph of the time it took for the decomposable litter to decompose. Each type of litter can be represented by a piece of litter glued to the time line or graph.
- Ask students to write a story about animals and litter in their journals. They can elaborate about helping to save an animal and cleaning up an area to provide a litter-free habitat for wildlife. This can be done in a "fortunately" and "unfortunately" format. For example, fortunately, there was a beautiful park. Unfortunately, someone threw

a bunch of litter in the park. Fortunately, it was all in one big pile. Unfortunately, the wind blew and scattered the litter around. Fortunately, most wildlife that lived there kept away from the litter. Unfortunately, one young raccoon . . . The stories could be submitted for the school's newspaper or shared with another class.

**Note:** Younger students can dictate the story while someone else writes it down. The story can also be recorded on a tape recorder, or it can be written as a class. For older students, ask them to write a narrative that provides a context within which the incident occurs and include details to develop the plot.

## EXTENSIONS

- Encourage students to set up other experiments on the decomposition or breakdown of items. For example, a container of soil and litter can be placed in the sunlight to see whether sunlight will make certain materials decompose or break down faster.
- Plan a cleanup trip to a local playground or park. Your class can also participate in a yearly beach clean-up day. Contact the California Coastal Commission at 1-800-COAST-4U to participate in the yearly beach cleanup day and become involved in other projects through their program called "Adopt-A-Beach."
- Read *Kiya the Gull* by Fen Lasell. Encourage the class to write and illustrate its own book about litter and wildlife.
- Invite a representative from a park or zoo to visit your class and discuss how litter impacts the animals. Have students prepare questions ahead of time.

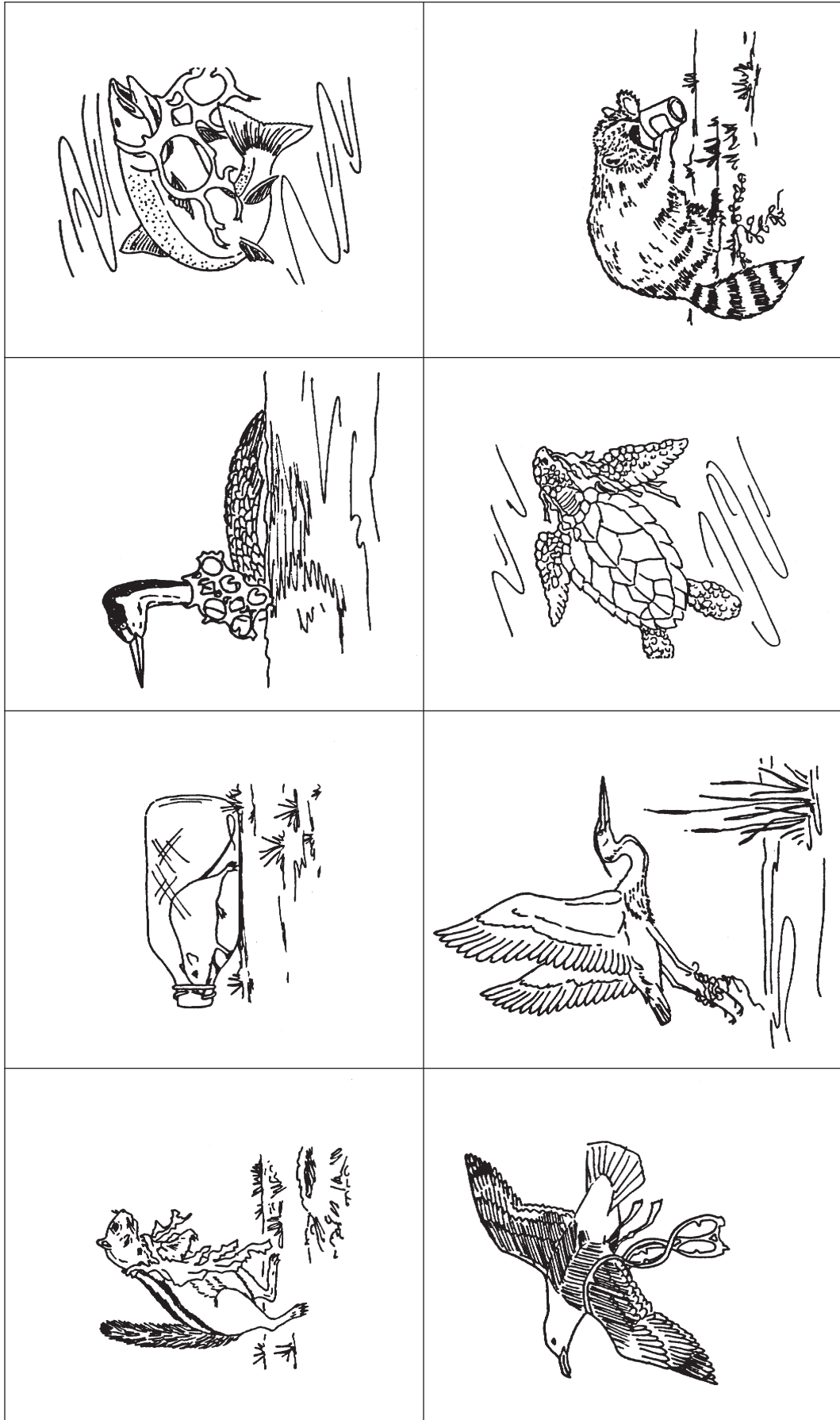
## RESOURCES

### Book

Lasell, Fen H. *Kiya the Gull*. Reading, Mass.: Addison-Wesley Publishing Co., 1969.

A boy rescues a gull that became tangled in fishing line.

## WAYS LITTER INJURES WILDLIFE



# LITTER OVER TIME

Estimated decomposition or break-down time for objects exposed to light and air.

Litter	Decomposition or break-down time guessed by students	Observed decomposition or break-down time	Decomposition or break-down time estimated by scientists*
Banana peel			2 months
Notebook paper			3 months
Comic book			6 months
Wool mitten			1 year
Cardboard milk carton			5 years
Wooden baseball bat			20 years
Leather baseball glove			40 years
Steel can			100 years
Aluminum soda can			350 years
Plastic sandwich bag			400 years
Plastic six-pack ring			450 years
Polystyrene foam cup			maybe never
Car tire			maybe never
Glass bottle			maybe never

\*Source: Cornell University Cooperative Extension of Albany County in New York and the Environmental Protection Agency.

## BACKGROUND INFORMATION FOR THE TEACHER

Most people know that broken glass can injure people, pets and other domesticated animals, and wildlife. But many people are unaware that other types of litter on land and in the water can also cause injury, illness, and even death to wildlife. Litter can be blown by the wind or washed by the rain into storm drains or water channels and get into lakes, rivers, and the ocean. Plastic litter, such as six-pack holders, fishing line, and fishing nets, is especially deadly. It is estimated that up to one million seabirds and 100,000 marine mammals die each year after ingesting or becoming entangled in plastic debris.

Fishing line discarded carelessly or accidentally into the waterways often wraps around legs, wings, and beaks of water birds like geese, grebes, herons, and pelicans. The line entangling birds' legs and wings prevents them from walking, flying, or swimming. Fishing line wrapped around birds' beaks prevents them from eating.

Sometimes fish or birds get caught in the loop portion of plastic six-pack holders. The loop will not stretch as the animal continues to grow and the animal ends up dying. These loops can also get tangled around the feet of waterfowl or get wedged around birds' bills. Birds with a ring from a plastic six-pack holder around its neck can get strangled when another ring in the holder gets snagged on an object.

Plastic is indigestible and pieces often accumulate in the gut of the animal that eats them. When cellophane wrappers and polystyrene pieces are swallowed, they can get caught in the digestive system, filling up the animal's stomach, causing the animal to starve to death.

Sea turtles are especially vulnerable to plastics in the ocean. Plastic sandwich bags and balloons look like food to sea turtles that eat them. The plastics can get caught inside a turtle's digestive tract, causing starvation or infection and often death.

Animals are also affected by other types of litter they might swallow. For example, bottle caps can cause damage to the internal organs of wildlife that eat them. Cigarette butts can become compacted in an animal's digestive system.

Other types of litter injure wildlife in other ways. Raccoons and other animals can cut their tongues on the sharp opened edges of food and soda cans. Mice and shrews crawl into opened bottles and get trapped inside, unable to get a footing on the slippery glass to push themselves back out through the small opening. Some litter, such as leftover food, can be eaten by wildlife, but in many cases the litter causes harm to wildlife, including ants, birds, and squirrels.

Some litter, such as apple cores, banana peels, and newspaper, decomposes rapidly and can become part of soil. Note that nonorganic litter, such as plastic, glass, and aluminum, cannot be decomposed by decomposers. It can only break down into smaller pieces. Plastic, glass, and aluminum can remain unchanged in the environment for hundreds, even thousands, of years.

# LESSON 3: Litter Relay

## LESSON'S CONCEPTS

- Litter can be sorted and some of it can be recycled.
- We can make choices to reduce litter and to reuse or recycle the litter we collect. This conserves natural resources.

### PURPOSE

Students will learn about the kinds of litter that can be reused or recycled.

### OVERVIEW

In this lesson students will:

- Listen to and/or read *The Great Trash Bash* by Loreen Leedy.
- Work in teams as they participate in a relay race to classify litter into categories of litter that can be reused, recycled, or sent to a landfill.

### CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS AND TO BENCHMARKS FOR SCIENCE LITERACY

- Students classify litter by categories of those that can be reused, can be recycled, or sent to a landfill.
  - "Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept, students know objects can be described in terms of the materials they are made of and their physical properties." (*Science Content Standards, Grades K-12; Kindergarten; Physical Sciences, Standard 1a*)
  - "An awareness of recycling, both in nature and in human societies, may play a helpful role in the development of children's thinking. Familiarity with the recycling of materials fosters the notion that matter continues to exist even though it changes from one form to another." (*Benchmarks for Science Literacy*,

page 119)

- "Students sort and classify objects." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 2)
- Students read or listen to the reading of *The Great Trash Bash* by Loreen Leedy.
  - "Students identify the basic facts and ideas in what they have read, heard, or viewed." (*English-Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 2)
- Students write a story about cleaning up the school grounds.
  - "Students write brief expository descriptions of a real object, person, place, or event, using sensory details." (*English-Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 8)

### SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, classifying

### TIME

30 minutes to prepare for the lesson; 60 minutes to implement the lesson

### VOCABULARY

landfill, reuse, recycle

## PREPARATION

- 1. Read the “Background Information for the Teacher” on page 187. For this lesson students should know which items can be recycled in their community.
- 2. Make a copy of “Litter Relay Planning Sheet” for each group of students (page 188).
- 3. See “Procedure, Part I,” section “A,” to determine whether additional preparation will be needed.
- 4. Invite the school custodian to explain what happens to the trash collected at school.

## MATERIALS

- The book, *The Great Trash Bash* by Loreen Leedy
- Approximately ten pieces of clean litter saved from Lesson 1 (e.g., aluminum can, plastic container, classroom paper, newspaper, packaging, milk carton, plastic wrap) (This should be different from the litter described below.)
- Newspaper on which to place the litter
- Six or seven pieces of clean unsorted litter for each team of six or seven students (Each team should receive the same type of litter; for example, (1) piece of white paper; (2) piece of cardboard; (3) aluminum can; (4) plastic cup; (5) polystyrene (Styrofoam) cup or meat tray; (6) paper plate; and (7) article of clothing.)
- Masking tape and markers
- One container labeled “to reuse”
- One container labeled “for recycling”
- One container labeled “to the landfill”
- Optional: The video *Kids Talkin’ Trash* (available free of charge from the California Integrated Waste Management Board)

## PRE-ACTIVITY QUESTIONS

- A. With approximately ten pieces of unsorted litter in front of the students, lead a discussion:
- Name three items in this pile that can be recycled. *Aluminum can, classroom paper, newspaper.*
  - Name two items in this pile that are reusable. *Plastic container, milk carton.*
  - When we put waste into a garbage can,

where is it taken for disposal? *To the landfill.* (Information about landfills is included in the K-3 Module, Unit 2, Lesson 1.)

- B. If available, show the video *Kids Talkin’ Trash*. Discuss with students the difference between reusing and recycling. Explain that when an item is reused, it is used as is, although it might get decorated or cut. When an item is recycled, this “old” item will be remanufactured into a new item. Therefore, after you put an item in a place where someone picks it up to be recycled, the item is taken to a manufacturing plant where the item is made into another item. It could be that a can is made into another can, but in order to do that, the original can had to be melted and reshaped into a new can. Newspaper is often recycled to make new newspaper; other paper is recycled and made into cereal boxes and other boxes; used glass is made into new glass containers, and some plastics are made into products, such as combs and plastic lumber.

## PROCEDURE

### Part I, Reading *The Great Trash Bash* by Loreen Leedy

- A. Read to students or have them read *The Great Trash Bash* by Loreen Leedy.
1. Consider using one of the following methods:
    - Read to students the book and show the illustrations. Ask students to describe what they see in each illustration.
    - Have one student read a page and show the corresponding illustration to the class. Ask a second student to describe the illustration. Other students can add to the description of the illustration. Then have a third student read the next page, and have a fourth student describe the illustration.
    - Pages could also be made into overhead transparencies (you might need to ask permission from the publisher to do this) and students can read these.

- A class set of this book can be purchased, and each student can read independently. A class discussion would follow.
2. Discuss with students:
- What is the subject and main idea of *The Great Trash Bash*? *Major Hippo decides that his town of Beaston has too much trash and encourages the town's citizens to solve the trash problem.*
  - What did the animals do in the book? *They cleaned up their town.*
  - What changes did the animals make in their everyday lives to clean up their town? *They made less trash; they bought in bulk; they bought only returnable bottles; they used bags over again; they fixed old things; they stopped littering.*
  - What did they recycle? *They recycled cans, glass, paper, and food scraps.*
  - On the last page the animals are celebrating. Why are they celebrating? *Because they cleaned up their town; they made changes in their everyday life to help solve the trash problem.*
  - What should we tell the animals about the balloons they have at the party? *Do not let them go into the air, because they can land in the ocean or on land and animals might eat them and get sick.* (This information is in Lesson 2). How else could these animals celebrate without having to use balloons? Answers will vary. Discuss acceptable answers.

## Part II, Participating in a Litter Relay Race

**Note:** For very young students, consider rearranging the game, using the entire class to work cooperatively to place litter into proper receptacles. Complete the chart “Litter Relay Planning Sheet” as a class, or skip doing the planning sheet.

- A. Form teams of six or seven students. Assign a number to each team. Make certain each team has the same amount and type of litter. That way the only variable will be how they choose to dispose of or use it. Also, make certain that there are enough pieces of litter for each team member to

run the relay at least once.

1. Provide the litter to be used in the relay, masking tape, and a marker for each team. Ask students to write their team's number on a piece of masking tape and tape it on each item.
  2. Provide a copy of the “Litter Relay Planning Sheet” for each team. Ask teams to sort their litter and categorize each item according to one or two of the following:
    - Can be reused
    - Can be recycled
    - Should be taken to a landfill
  3. Tell students that under the category of “can be reused,” each team must describe at least two ways the item placed in that category can be reused. Give each team ten minutes to plan its waste disposal strategy and to complete the “Litter Relay Planning Sheet.” (You might need to model how to complete this sheet by using a separate bag of trash. Consider getting older students to help younger students to complete the chart.)
- Note:** Younger students can draw or tell orally what goes on the “Litter Relay Planning Sheet.”
- B. Set up the “to reuse” container approximately 10 feet from the starting line; the “for recycling” container 20 feet from the starting line; and the container representing the landfill as far away on the playground as is reasonably possible. This setup reflects the amount of natural resources required to replace the item for each waste management option (i.e., the farther away, the more resources that are needed). (Natural resources are studied in the K-3 Module, Unit 1.)
- C. Have teams bring their lists and lead students outside to participate in the relay. Explain the rules of the game: This is a modified relay race in which only one person at a time from each team can put something in one of the containers and only one item at a time can be deposited. Each group should follow the plan that was recorded on its “Litter Relay Planning Sheet.”
- D. Call out each item (e.g., paper plate) as one student from each team grabs the item and runs to the appropriate container. As soon as the fastest student returns, call out the

next item (e.g., article of clothing). Another team member cannot run until the previous one has returned. Continue until all items have been placed in the containers. The winning team can be the one that did this the fastest, reused the most items, had the least number of items placed in the landfill, or had the most creative way to reuse items. (You can add winning criteria until each team becomes a winner.)

**Note:** Another option to this game is not to call out each item. Allow each team to select each item based on any order that the team members decide.



Students in Lynda Mooney's first-grade class at Las Palmas Elementary School participate in the litter relay.

## DISCUSSION/QUESTIONS

- A. When the last team finishes managing its litter, gather everyone together; bring the reuse, recycle, and landfill receptacles in front of the class; and conduct a follow-up discussion.
- B. Review the items in the different containers. Are the items in the reuse bin really items that are commonly reused? How often are these items really reused? Why? For example, point out that while some people occasionally reuse polystyrene (Styrofoam) cups or meat trays, they normally end up in the landfill.
- C. Ask the students what methods of waste disposal each winning team used. *A team recycled and reused materials to the greatest extent possible; a team reused the most materials; a team had the least number of materials in the landfill.*
- D. How does reusing and recycling materials conserve natural resources? *Fewer natural re-*

*sources are needed, because items are reused and recycled; so not as many new items are needed to be made from natural resources.*

## APPLICATION

**Homework Assignment:** Have students observe the litter they see on the way to and from school. Have them record what should be done with each piece (e.g., reuse, recycle, or place in a trash can).

- A. Ask students to share their homework assignments.
- B. Ask students to write a story, similar to *The Great Trash Bash*, about cleaning up the school grounds or other area close to the school. This can be done in groups or as a class, with each student writing a part of the story and illustrating it. The story should include a plan to keep an area litter free.

## EXTENSIONS

- A. Read Bill Peet's *The Wump World* as an introduction to reasons for reducing garbage.
- B. For older students: Ask them to look in their kitchen cupboards and identify all of the disposable items, such as paper napkins, plastic utensils, and paper plates. List reusable substitutes for each disposable product.

## RESOURCES

### Videos

*Kids Talkin' Trash.* Alameda County Waste Management Authority, 1995. Distributed by the California Integrated Waste Management Board (14 minutes).

Students learn how to make less garbage and protect the environment by practicing the four R's: reduce, reuse, recycle, rot.

*Recycling: It's Everybody's Job.* Washington, D.C.: National Geographic Society, 1992 (20 minutes).

For a class project, students sort through and separate family garbage to learn why recycling can be part of a solution to our solid waste problem.

### Books

*15 Simple Things Californians Can Do to Recycle.* Prepared by The EarthWorks Group and the California Department of Conservation. Berke-

ley: EarthWorks Press, 1991. Distributed by the California Department of Conservation.

Provides information on how to recycle.

Gibbons, Gail. *Recycle! A Handbook for Kids*. New York: Little, Brown and Company, 1992.

Easy-to-read style and colored illustrations explain the importance of recycling and how various materials are recycled.

Leedy, Loreen. *The Great Trash Bash*. New York: Holiday House, 1991.

A story about how the inhabitants in Beaston solved their trash problem by deciding to make less trash, fixing things, cleaning up litter, and building a recycling center.

Pee, Bill. *The Wump World*. Boston: Houghton Mifflin Company, 1970.

Pollutians from the planet of Pollutus come to

the beautiful Wump World and pollute the environment as they settle in. When the Pollutians leave, the Wump World is trashed, but slowly it will get cleaned up.

Stwertka, Eve, and Albert Stwertka. *Cleaning Up: How Trash Becomes Treasure*. Photos by Mena Dolobowsky. At Home with Science series. New York: Simon and Schuster, 1993.

Illustrated with black and white cartoons, it includes information on the problems with trash, ways to sort trash (including a description of a materials recovery facility), and the leachate from landfills. Written for upper-elementary school students but can be used as a reference by the teacher.

## BACKGROUND INFORMATION FOR THE TEACHER

Recycling is the process of taking an item and remanufacturing it into another item. Technically, recycling is different from reusing. When you reuse an item, you use it as is, although you might alter it by cutting or decorating it. When you recycle an item, this item will be remanufactured into a new item. For example, an aluminum can is melted down and reshaped into a new aluminum can. Newspaper is often recycled to make new newspaper; other paper is recycled and made into cereal boxes and other boxes; used glass is made into new glass containers; and some plastics are recycled into new items, such as hair combs and plastic lumber.

For more information on recycling, see the K-3

Module, Unit 2, lessons 2 and 4, and in the 4-6 Module, Unit 2, lessons 2, 3, and 4. Also see "Appendix B-III, Recycling."

The purpose of this lesson is to emphasize to students that some litter can be recycled. Therefore, by placing the recycling station in the relay closer than the landfill, we are emphasizing that through recycling we are saving materials and therefore conserving natural resources. We are also saving landfill space. (More information about landfills is provided in the K-3 Module, Unit 1, lessons 3 and 4, and in the 4-6 Module, Unit 2, Lesson 1. Also see "Appendix B-IV, Landfill Issues.")

# LITTER RELAY PLANNING SHEET

Names of team members: \_\_\_\_\_

Name of team recorder: \_\_\_\_\_ Team number: \_\_\_\_\_

1. Type of litter	Reused (how)	Recycled	To landfill
2.			
3.			
4.			
5.			
6.			
7.			

# LESSON 4: Packaging Can Become Litter

## LESSON'S CONCEPTS

- Most litter is materials used in packaging.
- People can choose to reduce the amount of packaging they buy and use.

### PURPOSE

Students will learn that similar products (e.g., cookies) are packaged in a variety of ways and that some packaging might be considered excessive. They learn how to reduce the amount of disposable packaging in their lunches.

### OVERVIEW

In this lesson students will:

- Discuss the purpose of packaging.
- Compare the amount of packaging used for different cookies.
- Identify the waste created by packaging.
- Determine that some packaging is easier to recycle than others.
- Reduce the amount of disposable packaging used in preparing their lunches.

### CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS

- Students compare packaging material and the packaging of different brands of cookies. They classify packaging of cookies according to its purpose and what material the package is made of.
  - "Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept, students know objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical properties (color, size, shape, weight, texture, flexibility, attraction to

magnets, floating and sinking, etc.)." (*Science Content Standards, Grades K–12; Kindergarten; Physical Sciences, Standard 1a*)

- "All matter has properties that can be observed, defined, and recorded. Matter occupies space, it has substance, and we can measure its weight." (*Science Framework, page 41.*)
- "Students sort and classify objects." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 2*)
- "Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept . . . students will . . . record observations and data with pictures, numbers, and/or written statements." (*Science Content Standards, Grades K–12; Grade 1; Investigation and Experimentation, Standard 4b*)

### SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, classifying, applying

### TIME

45–60 minutes to prepare for the lesson; 60 minutes for "Part I" and 60 minutes for "Part II" to implement the lesson

### VOCABULARY

packaging

## PREPARATION

- 1. Read the “Background Information for the Teacher” at the end of this lesson.
- 2. Ask students to bring to class the next day a variety of packaging materials, such as aluminum cans, polystyrene trays, and plastic produce bags. You might want to bring extra packaging items.
- 3. Make four copies and one transparency of “Packaging of Cookies Chart” or make one large class chart for younger students (page 195).

## MATERIALS

For this activity, chocolate chip cookies were selected, but any other type of cookie can be used. The purpose is to compare similar types or brands of cookies which are packaged differently.

- Five packages of cookies: (1) packaged bulk cookies (e.g., ones baked by the store); (2) bulk prepackaged cookies; (3) cookies in a tray; (4) cookies divided into small groups by paper cups; and (5) other cookies packaged differently from those described in 1–4 (e.g., individually packaged)
- Samples of packaging that students are familiar with (e.g., “prepackaged lunches”)
- Four copies and one transparency of “Packaging of Cookies Chart” or one large class chart (for younger students)
- Butcher paper for developing a chart to compare pros and cons of packaging
- Clean cloth towels or reusable plates on which to lay the cookies
- Plastic gloves or sandwich bags

(**Note:** If students wear plastic gloves or sandwich bags while handling the cookies, they can eat the cookies later. Students could think of ways to reuse the gloves or bags when they are finished.)

**Note:** It is recommended that the class use as few gloves or sandwich bags as necessary, because the ultimate goal is to avoid producing unnecessary waste.

### Optional

- A video camera to use for the “Application” section “B”

## PRE-ACTIVITY QUESTIONS

- A. Ask students whether most of the litter they picked up on the school grounds (or other areas) in Lesson 1 was packaging material. *Yes. Why do they think that is so?*
- B. Have students show the packaging they brought from home. Give students an opportunity to share with the class the packaging they brought.
- C. Have students separate the packaging into categories. Allow them to select whatever categories they choose, but note how they decide to do this. For example, did they classify the packaging by type of material (plastic, paper), by whether it can be reused or recycled, or by some other method?
- D. Ask students why things need to be packaged. You might show students something they are familiar with, such as a “prepackaged lunch.” Have students take it apart to look at the packaging.
- E. Have students discuss the purposes for the packaging; e.g., maintaining safety, marketing, protecting the product. List their ideas on the chalkboard.
- F. Have students help you list some disadvantages of overpackaging. *Could become litter; fills up garbage cans.*

**Note:** The thought of what is “overpackaging” can vary from person to person.

## PROCEDURE

### Part I, Analyzing Cookie Packaging

- A. Ask students:
  - Do you ever eat cookies as a snack at home?
  - What type of packaging do the cookies usually come in?
- B. Show students the five packages of cookies. Have students make guesses as to which cookies they think will produce the least amount of packaging waste and which ones will produce the most. Write their guesses on the chalkboard or butcher paper and compare this to their findings at the end of this activity.

**Note:** With younger students, consider doing the following activity as a class, analyzing one package of cookies each day.

C. Divide the class into four teams.

1. Provide a copy of "Packaging of Cookies" to each group.
  - Analyze one package of cookies as a class and complete the first row on the "Packaging of Cookies Chart."
  - Assign each team a number from two through five (to correspond to the numbers on the "Packaging of Cookies Chart").
  - Give each team a different package of cookies to analyze.
  - Provide plastic gloves or sandwich bags with which students should handle the cookies.
2. Ask students to complete columns "A" through "D" on the chart for the number they were assigned.
  - They should estimate the number of pieces of packaging and the number of cookies in the package.
  - Then they should look at the outer packaging and open the package to see whether there is additional packaging inside.
  - They should count the pieces of packaging and then count the cookies and record their findings on their charts.

**Note:** When counting the number of cookies, students may have to spread the cookies out on a towel.

3. Have the students identify the different types of packaging (paper bag, plastic coated bag, plastic tray, paper cups). Help them to complete column "E" in "Packaging of Cookies Chart."

**Note:** The "Packaging of Cookies Chart" can also be used as an assessment tool.

4. Ask groups to make their presentations to the class regarding their findings. Record on the transparency, "Packaging of Cookies Chart," each group's responses.
5. Discuss with students why they think the manufacturer chose each type of packaging. *To keep the product safe, to advertise, to keep contents from breaking.*

6. Ask students:

- What were the differences between your estimates and the actual number of packaging and cookies?
  - Were you surprised at the actual number of pieces of packaging and cookies? Why or why not?
  - Do you think that all the packaging is necessary? Why?
7. Ask students to determine whether there is unnecessary packaging in the package of cookies that they were assigned and to circle "yes" or "no" in column "F" in the "Packaging of Cookies Chart." Ask groups to show the class which pieces of packaging are not necessary and to explain why.
  8. Ask students whether any of the packaging can be reused or recycled. Have students record their answers in column "G" of the chart. Does any of the packaging contain recycled material? (This information would be printed on the outside package.)
  9. Discuss the pros and cons of packaging for cookies.

**Note:** Save the packaging from the cookies to use in the "Extension" section of this lesson.

D. Go to "Discussion/Questions for Part I" on page 192.

## Part II, Zero-Waste or Trash-Free Lunch

**Note:** If you do not want to organize a zero-waste lunch, consider doing section "A"; otherwise, do sections "B" through "F." You can also do section "A" as an introduction to the zero-waste lunch (then skip section "B").

- A. Provide a variety of snacks to students (or ask them to bring snacks).
  - Bring or have students bring their snacks to a central area and lay them down in front of them.
  - Ask which snack will probably end up with the most amount of trash.
  - Discuss each answer, including what is recyclable (e.g., aluminum can) and what is reusable (e.g., plastic container).
  - Ask which snack made the least amount of trash.

(Use school's letterhead.)

Dear Parent or Guardian,

Please read the following with your child:

We have been learning about ways to reduce, reuse, and recycle. We are planning a "Zero-Waste Lunch" on \_\_\_\_\_ to show that people can generate less trash by using reusable or recyclable containers and other items, such as reusable eating utensils.

Please talk to your child about ideas for this lunch so that there will be as little garbage left as possible. Many ideas were discussed in class. Some ideas are listed below:

- Place the lunch items in a lunch box, knapsack, or cloth bag (e.g., a small pillow case).
- Use reusable containers (e.g., plastic containers, such as yogurt or margarine containers) for sandwiches and other lunch items.
- Have the drink be in a thermos, reusable plastic water bottle, or a recyclable aluminum can.
- Bring metal or reusable plastic utensils.
- Bring a cloth napkin instead of a paper napkin.

Thank you for your cooperation,

- B.** Ask students to bring their lunches to eat in the classroom (or ask them to bring all the waste from their lunches to class).
- After lunch, sort and analyze the trash.
  - Determine with students what to do with the trash. (Some can be reused, some can be recycled, and some needs to be put into the trash can.)
- C.** Ask students how they can reduce the amount of trash they generated from their lunches. Suggest to students to bring a zero-waste or trash-free lunch (or snack).
- Discuss with students how a zero-waste or trash-free lunch could be packaged.
  - Write and/or draw ideas on the chalkboard. For example, sandwiches can be brought in a reusable plastic container. The lunch can be packed in a cloth bag or lunch box.
  - Select a day to have a trash-free lunch (or snack).
  - Ask the cafeteria for help for those students who do not bring lunches from home.
  - Explain to students that even if everyone is not able to bring a zero-waste lunch, the waste from the entire class will still be lowered.

- D.** Send a letter to parents explaining the purpose of the zero-waste lunch and ask them for their cooperation.
- E.** On the day of the zero-waste lunch and before the students eat their lunches, ask them to share with the class their ways of packaging.
- F.** At the end of the lunch period, evaluate the amount of trash that was generated.
- How did this amount of trash compare to the first trash from the lunch that we analyzed?
  - Can less trash be generated next time? If so, how?

## DISCUSSION/QUESTIONS

### For Part I, Analyzing Cookie Packaging

- A.** What did you learn about packaging today?
- B.** What really surprised you about the different ways that cookies are packaged?
- C.** Which cookie packaging produced the most solid waste? How do your results compare with your predictions at the beginning of the lesson ("Procedure, Part I," section "B")?
- D.** What can you do to conserve natural

resources and lower your production of waste in regard to cookie buying and packaging? *Buy cookies with the least amount of packaging; buy cookies in reusable or recyclable packaging.*

## For Part II, Zero-Waste or Trash-Free Lunch

- A. What are some ways that we can pack a lunch to reduce waste? *Use a lunch box; place foods and drinks in reusable or recyclable containers.*
- B. How can packaging create litter? *Someone removes the packaging, then drops it; packaging material is blown by the wind from a trash can on the ground.*

## APPLICATION

- A. Have students come up with ideas on how to reuse the plastic gloves and bags they used in this lesson.
- B. Ask students to write a sentence or two in their journals about what they have learned in this lesson. They can also draw a picture. Have them share their journal entries in small groups. Check each student's writing.
- C. Place a trash can outside the classroom. Before recess, give each student a piece of wrapped candy. As students walk out the

door, observe (or use a video camera to videotape) what they do with the wrappers. When they come back from recess, have students tell you what they did with their wrappers. Share with students your observations. Ask students what they could do with wrappers if there is no garbage can close by. *Place the wrapper in a pocket.*

- D. Have students identify the types of natural resources used to make the packaging. Where does plastic come from? Where does paper come from? Have students identify examples of natural packaging, such as banana peels and orange peels.

**Note:** The K-3 Module, Unit 1, provides information and lessons about natural resources.

- E. After a couple of weeks, discuss with students the types of materials they use to bring their lunch in. Ask students to identify ways they can reduce the packaging in their lunches. Have students write a letter to their parents explaining what they have learned.

**Project Idea:** Have students organize the sale of reusable lunch bags or boxes. They can have adults help them to sew cloth lunch bags.

Picture intentionally deleted.

Picture intentionally deleted.

At the Solar Community Housing Association, Homestead CO-OP, children observe packaging from cookies.

## EXTENSIONS

- A. Encourage students to use their imaginations to create art projects using packaging materials. They can also develop a list of uses for various types of packaging. You may want to have a contest between the teams, and the team that has the most ideas for different ways to use the packaging wins. You can also create other “winning categories” like “most creative idea,” “funniest idea,” and “easiest to create.”
- B. Have students weigh the package with cookies, then just the package. How much of the weight is packaging material?
- C. Invite a school cafeteria employee to speak to the class about food packaging. Why is it important? What happens to the packaging after the food is eaten?
- D. Have students design a package for cookies that will protect the cookies, but will not have “excessive” packaging. Students could send their ideas to the manufacturer, or students could tell other students why they should buy certain packages of cookies.

# PACKAGING OF COOKIES CHART

Brand of cookie	A Estimated pieces of packaging	B Estimated number of cookies in package	C Actual pieces of packaging	D Actual number of cookies in package	E What type of packaging was used? (Circle answer.)	F Is there unnecessary packaging? (Circle answer.)	G Can the packaging be reused or recycled? (Circle answer.)
1.					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>
2.					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>
3.					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>
4.					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>
5.					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>
					<ul style="list-style-type: none"> <li>• Plastic coated bag</li> <li>• Paper bag</li> <li>• Paper tray</li> <li>• Paper cups</li> </ul>	Yes  No	<ul style="list-style-type: none"> <li>• No</li> <li>• Can be reused</li> <li>• Can be recycled</li> </ul>

## BACKGROUND INFORMATION FOR THE TEACHER

At an early age children can understand that when they buy something, they also buy the packaging. They can assume some responsibility, as wise consumers, to avoid purchasing overpackaged items, to make sure that packaging does not become litter, and that packaging is reused or recycled. If it is waste, they need to know how and where to dispose of it properly.

Packaging has many uses and benefits. Packaging protects the contents from physical damage and spoilage, and it may also be used to ensure that the contents are sanitary. By reducing spoilage and damage, packaging can actually reduce the volume of solid waste. Labels on packaging identify contents and provide directions for use. Packaging may help retailers advertise their goods, keep sales records straight, and discourage theft. Packaging also provides consumer convenience. It may reduce waste by dividing food and beverages into individualized portions, which minimizes leftovers that could end up in a landfill.

Unfortunately, packaging contributes substantially to the volume of solid waste that is commonly disposed of, depletes natural resources, adds to litter and pollution, and increases the

cost of a product. Most packaging is meant to be disposed of after one use. Some packaging materials end up as nonbiodegradable or toxic materials in the environment. Most litter is packaging and includes cans, bottles, paper wrappers, and plastic and paper bags.

Excessive packaging is often in the eye of the beholder. Generally, packaging that is purely for the convenience of the retailer or consumer, only for advertisement, or that is not related to protecting contents from damage or spoilage may be considered excessive.

Excessive packaging can be reduced by encouraging packaging manufacturers and large-scale packagers to implement voluntary packaging reduction and research into new, less harmful or wasteful packaging. Packaging regulations by federal and state governments could reduce excessive or environmentally harmful packaging and promote the use of reusable and recyclable packaging. Such regulations can take the form of container deposits, taxes, labeling, regulatory reviews, bans on specific packages, financial incentives (tax breaks or penalties), and packaging standardizations.

# LESSON 5: Antilitter Promotional Campaign

## LESSON'S CONCEPT

Education and publicity can help discourage people from littering.

### PURPOSE

Students demonstrate what they have learned about the proper disposal of waste by taking personal action.

### OVERVIEW

In this lesson students will:

- Promote an antilitter campaign at their school by selecting one of the following activities:
  - Design posters to place around the school to encourage others and to remind themselves not to litter.
  - Make signs for highly littered areas on the school grounds (or other areas).
  - Make a display to show how to package a zero-waste lunch.
  - Write an antilitter jingle based on a well-known song.
- Survey the school grounds (or other areas) to determine whether their antilitter campaign is working.
- Read or listen to *Where Is the Treasure?* by Kelli C. Foster and Gina Clegg Erickson.

### CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS AND TO BENCHMARKS FOR SCIENCE LITERACY

- Students communicate in groups about ways to advertise the antilitter campaign. They also communicate with other people what they know about litter.
  - "People can learn from each other by telling and listening, showing and watching, and imitating what others do." (*Benchmarks for Science Literacy*, page 140)
  - "Scientific progress is made by asking meaningful questions and conduct-

ing careful investigations. As a basis for understanding this concept . . . students will communicate observations orally and in drawings." (*Science Content Standards Grades K–12; Kindergarten; Investigation and Experimentation*, Standard 4e)

- Students design posters, make signs, or prepare displays about the importance of not littering.
  - "Students create original artworks based on personal experiences or responses." (*Visual and Performing Arts Framework; Visual Art: Creative Expression Component*, Goal 4, page 101)
  - "Students write words and brief sentences that are legible." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 3)
- Students read or listen to *Where Is the Treasure?* by Kelli C. Foster and Gina Clegg Erickson.
  - "Students identify the basic facts and ideas in what they have read, heard, or viewed." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 2)
  - Students "identify characters, settings, and important events." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 2)

### SCIENTIFIC THINKING PROCESSES

observing, communicating

### TIME

10 minutes to prepare for the lesson; 45–60 minutes to implement the lesson; plus time

for weekly walks around the school grounds or other designated area to note the amount of litter

## VOCABULARY

slogan, advertisement, jingle

## PREPARATION

**Note:** There is no “Background Information for the Teacher” in this lesson.

- 1. Obtain several examples of advertisements, one of which should have a slogan (catchy phrase), to share with students.
- 2. Ask students to bring to class advertisements from magazines or newspapers. Provide a magazine or newspaper for each student who does not have access to one of these at home. Students should select one or two advertisements to share with the class, one of which should have a slogan or “catchy phrase.”
- 3. Contact the local waste management coordinator to see whether antilitter literature and other resources are available. (You may already have done so in Lesson 1.)

## MATERIALS

- The book, *Where Is the Treasure?* by Kelli C. Foster and Gina Clegg Erickson
- Examples of advertisements from magazines and newspapers
- Samples of child-centered slogans from newspaper and magazine advertisements
- Art materials
- Poster paper and other paper (especially one that has been used on one side or paper made from recycled fibers)
- Pencils
- Butcher paper

## PRE-ACTIVITY QUESTIONS

- A. Read to students or have them read *Where Is the Treasure?* by Kelli C. Foster and Gina Clegg Erickson. Discuss what the animals did. *They cleaned up their environment.* What were the treasures? *Parts of their environment, including the bog, beach, forest, and their clubhouse.*
- B. Ask students:
  - Do we have a litter problem in our school? In our neighborhood?
  - Why should we care about how our school (or certain other area) looks?
  - What can we personally do to keep our

school grounds (or other area) from being littered?

- What can we do to encourage others not to litter?
- C. Ask students, “What is an *advertisement*?” *An advertisement promotes an idea, a product, or a service.* Discuss billboards, television advertisements, posters, store displays, and newspaper ads and why people make advertisements.
- D. Show examples and ask students to share with the class some advertisements from magazines or newspapers. Discuss:
  - What product or company is being promoted?
  - What audience is being targeted in particular; e.g., young people, women, wealthy people?
  - What are *slogans*? *Catchy phrases.* What slogans are being used in the advertisements?
- E. Ask students to think of some well-known slogans that they might have heard on television (e.g., “Give a hoot, don’t pollute”). What do you remember about them? *The words and what they represent.* What makes them so powerful? *They are phrases that are easy to remember; some are funny.*
- F. Discuss some jingles (songs) that students have heard that promote an idea or product; for example, a theme song from a television show. Jingles are designed to grab one’s attention and can stimulate instant recall.

**Homework Assignment:** Assign students to watch television or listen to radio advertisements and to report back to the class a slogan or jingle used in one advertisement.

## PROCEDURE

**Note:** School administrators should first be informed of the plan to develop an antilitter campaign and should approve it, if your class plans to make it a schoolwide project. If that is not possible, have students make posters for the class and also encourage students to take their posters home.

- A. Tell students that they will be making poster ads or signs, writing jingles, or designing dis-

plays to teach others about the importance of not littering.

- B. Ask students for important ideas that they have learned about litter that they could teach to others in their ads. (This is also a good assessment opportunity.)
  - As a class, develop a bank of key words and phrases that address litter problems and ways to solve them.
  - Students should focus on: What people should know about litter and why people should not litter. Emphasize no littering and reusing and recycling trash whenever possible.
- C. Allow students to decide which of the following they would like to do:
  1. **Poster.** Some students can work in teams or as individuals to develop posters with or without slogans that advertise one of the key concepts about litter.
    - a. Students can draw posters that graphically show a portion of the school grounds (or other area) with litter and the same area without litter.
      - One way to do this is to fold a piece of drawing paper in half.
      - Ask students to draw two identical scenes.
      - Then they can place litter in one of the illustrations by gluing bits of paper and pictures of bottles and cans.

*Note:* For younger students, you might need to help them write their slogans.



Submitted by Sharon Janulaw, kindergarten teacher, Marguerite Hahn Elementary School, Cotati-Rohnert Park Unified School District.

- b. Another way to do the poster is to give each group of two to four stu-

dents an 8½- by 11-inch sheet of plain paper—preferably used on one side.

- Fold paper into fourths.
  - Have each student sketch in one quadrant his or her idea for a poster. Group members can also choose to work together to make four different sketches, adding to some, deleting material in another.
  - Students should first outline their drawing in pencil so they can erase parts if they want to.
  - Teach students to do their poster corner to corner, edge to edge, so the whole paper is used.
  - Once they come up with the picture they like, have them show it to you.
  - Provide them with a large piece of butcher paper to do their final drawing (or tape four pieces of 8½- by 11-inch sheets of paper to form one piece that is 17 by 22 inches.
- c. Students' posters can be displayed around the school, or they can be taken home. Students can also make a poster for each class. Discuss other good places to hang the posters at school for others to see. Make sure that the posters themselves don't become litter.

Picture intentionally deleted.

Students in Anne Harris's second-grade class at Jefferson Elementary School draw posters to advertise a key concept about litter.

2. **Sign.** Some students can make signs for highly littered areas on the school grounds (or other areas).

- Students can design signs to encourage other students to pick up after themselves and keep the school clean. They can place these signs as reminders around campus.
  - The class can adopt a section of the school grounds (as is done in the Adopt-a-Highway program). Students can make a sign that says: "This area is being kept litter free by Mrs. Smith's second-grade class."
3. **Jingle.** Some students can work with other students to develop a jingle based on a well-known song. Have students share the jingles they have written with other classes. For example:

#### **Our Litter Lies Over the School Grounds**

(Sung to the tune of "My Bonnie Lies over the Ocean")

Our litter lies over our school grounds,

Our litter lies over the land,

Our litter is scattered all over,

Please put your trash into a can.

Please put, please put, oh please put your trash in a can, a can

Please put, please put, oh please put your trash in a can.

4. **Display.** Some students can make a display to show how to package a zero-waste lunch. Perhaps students can display their work during lunch hour in the school cafeteria or lunch area and be available to answer questions.
- D. Once the projects are completed, encourage students to share posters, signs, jingles, or displays in class.

## **DISCUSSION/QUESTIONS**

Discuss with students:

- How do slogans, jingles, signs, and displays help to advertise the antilitter program?
- What do you think other students will notice about the posters, signs, displays, or jingles that you have designed?

## **APPLICATION**

**Homework Assignment:** Ask students to write a pledge in their journals to do one thing to prevent litter. "To prevent litter, I pledge . . ." or "One thing I will do to prevent litter is . . ."

- Encourage students to share their pledges.
- Return to your clean-up site with your class. Is there more litter? Discuss some ways to control this litter (e.g., clean it up every day, weekly, or monthly; put up signs; verbally remind others to use the recycling bin or trash can).
- Have students take weekly walks around the campus (or other area) and note the amount of litter in different places and what areas still have problems with litter. Consider having the class design a bar graph to show progress made with the antilitter campaign.

### **Project Ideas:**

- Students can do a presentation for other classes to teach them why it is important not to litter. Each group could choose a particular area to emphasize (e.g., packaging, litter and wildlife, litter on the school ground). In their presentations they could encourage other students to join their campaign and share ideas to decrease litter.
- Students could collaborate with local businesses to do a community project by drawing "reminder" signs on poster paper or on reused grocery bags to encourage people not to litter.
- Students could promote a litter-free campus through bookmark and T-shirt design contests.

## **RESOURCE**

### **Book**

Foster, Kelli C., and Gina Clegg Erickson. *Where Is the Treasure?* Illustrated by Kerri Gifford. Get Ready . . . Get Set . . . Read! series. Hauppauge, N.Y.: Barron's Educational Series, Inc., 1995.

The simple-to-read text and colored illustrations in this book describe how a group of animals cleaned up their environment.